Brinkman, Alfred Henry (1873-1945)

Herb. received 1922
includes ca 215 bryophytes, some
identified by G.B. Kaiser.

Bibl. Bryologist 49: 1-3. 1946

Note- he collected and sold plants,
mostly bryophytes, from British
Columbia. There were printed
lists. Have we any?

Canadian Hepatics by A. Brinkman.

Bowling Lake
Alberta
Canada

Marchantia polymorpha, L
Marsupella emarginata (Ehrh) Dum
Lophozia badensis, (Gottsche) Schiffn
barbata, (Schreb) Dum
Bavariana, Schiffn
heterocolpa, (Thed) M A Howe
Hunzeana, (Huben) Evans
lycopodioides (Wallr)
porphyroleuca, (Nees) Schiffn
Rutheana, (Limpr) M A Howe
ventricosa, (Ducks) Dum
Sphenolobus politus, (Nees) Steph
scitulus, (Tayl) Steph
Lophocolea minor, Nees
Chiloscyphus pallescens, (Ehrh) Dum
polyanthos
var rivularis, (Schrad) Nees
Plagiochasma trichophyllum, (L) Dum
Ptilidium ciliare, (L) Nees
pulcherrimum, (Web) Hampe
Porella rivularis, (Nees) Trevis

20 in all

Brinkman A.
Canadian Hepatics

Rec'd 30 Oct 1913

Canadian Hepaticae
by Brinkman

(over)

Mosses from A. Brinkmann recd Feb 1922 inserted in Herb.

Amblystegium compactum 153
filicinum 651
Juratzkanum 175
Kochii 91
riparium 304
serpens 395
V tenue 208
Amblystegiella subtilis 17
Andreae petrophila 349
Antitrichia californica 372
curtipendula
V gigantea 373
Aulacomnium palustre 406
Amphidium lapponicum 268
Barbula vinealis 238
Bartramia Oederi 711 / 741
Brachythecium albicans 311
Glareosum 284
Rivulare 332
rutabulum 7
oxycladon
salesbrosum 333
V turgidum 297
Bryum affine 264
caespiticium 858
capillare 997
pallens 90
pallescens 835
turbinatum 633
uliginosum 270
ventricosum 775
Calligeron giganteum → 900
stramineum → 277
Camptothecium nevadense 287
pinnatifidum 167
nitens 462
Campylium chrysophyllum 347
polygamum 716
Catharinea undulata 346
Ceratodon purpureus 221
Cinclidium stygium 352
Claopodium Whippleanum 59
Climacium dendroides 275
Dicranoweisia cirrhata 225
crispula 976
Dicranum Bergeri 331
Bonjeani 168
fuscescens 403
scoparium 393
spurium 448
strictum 160
undulatum 532
Distichium capillaceum 57
Ditrichum flexicaule
V brevifolium 537 / 907
Drepanocladus gracillescens 688
967 aduncus capillifolius 103
exannulatus 921
app V orthophyllus 926
revolvens 283
vernicosus 248
uncinatus 387

Encalypta Rhabdocarpa 362
Eurhynchium diversifolium 300
strigosum 58
Fissidens subbasilaris 405
grandifrons 343
Fontinalis chrysophylla 247
gigantea 140
Kindbergii 444
nitida 219
neo-Mexicana 68
Georgia geniculata 192
pellucida 258a
Grimmia apocarpa 222
V gracilis 220
ovata 350
pulvinata 74
tenuicaulis 201
Gymnostomum curvirostre 781
Grimmia torquata 519
Hedwigia albicans 123
Homalia Jamesii 50
Hygrohypnum dilatatum 1001
eugyrium
V mackayi 780
ochraceum 291
palustre 119 ✓ & 156
Hypnum reptile 22
Hylocomium proliferum 55
robustum 296
triquetrum 335
Leskea polycarpa 27
Leptobryum filiforme 289
Meesia trichodes 902
Mnium hornum 302
medium 258
punctatum 1014
venustum 552
Neckera Menziesii 374
Orthotrichum anomalum 122
cupulatum 208
obtusifolium 5
rupestre 269
Sturmii 266
Paludella squarrosa 438
Philnotis fontana 940
Polytrichum commune
V uliginosum 427
juniperinum
V alpinum 225 / 226
strictum
Pohlia cruda 492
albicans 778
commutata 772
nutans 603
Pseudoleskea atrovirens 218
radicosa 512
rigescens 276
Pterigynandrum filiforme 70
Rhacomitrium canescens 307
heterostichum 370
patens 679
Ptilium crista-castrensis 396

Sphagnum compactum	441
capillaceum	478
Busenii	451
fuscum	592
Girgensohnii	400 & 428 ✓
magellanicum	595
robustum	257
squarrosum	434
subsecundum	439
Warnstorfii	584
Splachnum sphaericum	249a
Scouleria marginata	256
Scleropodium obtusifolium	89
Scorpidium scorpidioides	453
Stereodon circinalis	518
cupressiforme	107
" var	164
reptilis	338
Timmia austriaca	144
megapolitana	361
Thuidium abietinum	630
Blandowii	280
delicatulum	183
recognitum	132
Tortula ruralis	218
Tortella tortuosa	8
Tayloria lingulata	707
Ulota Americana	12
Bruchii	217

[illegible]atics from A. Brinkmann

#1100 Conocephalum conicum
95 Preissia quadrata
[illegible] [illegible] [illegible]ica
[illegible] Metzgeria pubescens
[illegible] Gymnomitrium concinnatum
[illegible] " varians
[illegible] Marsupella [illegible]folia
[illegible] Jungermannia cordifolia
[illegible] " lanceolata
✓[illegible] " sphaerocarpa
[illegible] Lophozia alpestris
✓[illegible] " Hatcheri
[illegible] " confertifolia
[illegible] " Floerkii
✓[illegible] " incisa
[illegible] " longidens
[illegible] " longiflora
[illegible] " Schultzii type
1[illegible] " ventricosa v uliginosa
[illegible] Sphenolobus exsectiformis
✓[illegible] " Hellerianus
[illegible]2 " minutus
[illegible] [illegible] [illegible] [illegible]
[illegible] Cephalozia bicuspidata
[illegible] " media
[illegible] [illegible]ella serratissima
✓[illegible] Lepidozia reptans
[illegible] Porella navicularis
✓[illegible] Scapania Bolanderi
[illegible] " curta v geniculata
[illegible] " irrigua
[illegible] " subalpina
[illegible] " dentata
✓1[illegible] " uliginosa
[illegible] " undulata
[illegible] Radula Bolanderi
[illegible] " complanata
[illegible] Frullania nisquallensis
917 Scapania dentata

39 hepat

inserted in herb.

188 in all

Brinkman Herb._

A group of 21 spwcimens of hepatics of the genus Diplophyllum were found in the fungus herbarium and inserted inthe General Hepatic Herb. in March 1982. Most of them were collected at Holberg on North Vancouver Island, 1932=37 by a Miss or Mrs Mackenzie (Miss C. E. Mackenzie?).

Brinkman published a paper on this genus in Bryologist 43: 38-45. 1940. I do not find his new taxon, D. hyalinus, among the specimens.

G.S.

NOTES BY MR. BRINKMANN

(to be kept for reference to Brinkmann's specimens)

(specimens are currently being revised by Dr. Bird, Calgary).

(June 1970, U.M.)

[illegible] named [illegible] [illegible] [illegible] [illegible] [illegible]

1 [illegible] [illegible] 910

1 [illegible] [illegible] [illegible] [illegible] [illegible] 2

2 [illegible] ~~[illegible]~~ with papillae [illegible] papillae on [illegible] [illegible] black

[illegible] 805. 551 909 ? 804

2 [illegible] with papillae without [illegible] papillae 3

3 [illegible] with very noticeable disks of papillae on dorsal surface ? [illegible]

3 " " less " " " " 640

4 " " dorsal [illegible] end of [illegible] small disks of papillae

[illegible] papillae not [illegible] [illegible] [illegible] 5?5 910

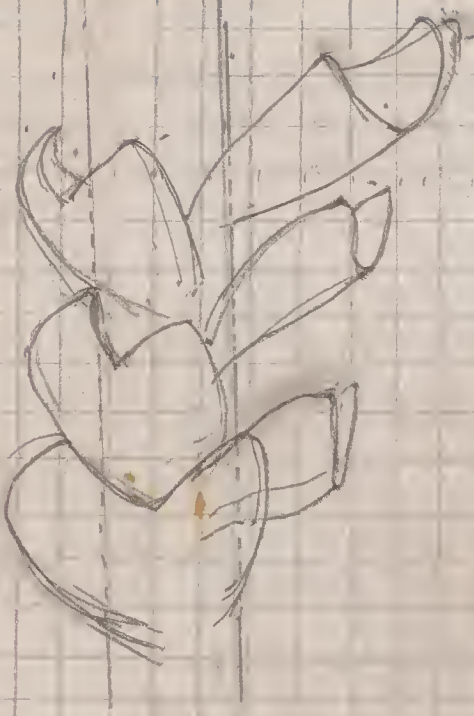
4 as above [illegible] dorsal disks of [illegible] [illegible] [illegible]

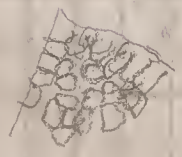
5 [illegible] [illegible] ~~[illegible]~~ papillae like [illegible] on dorsal surface

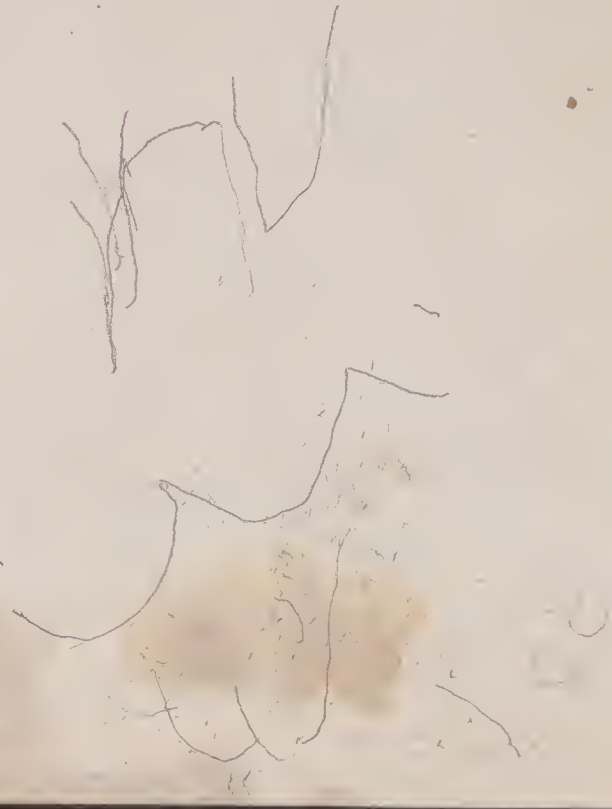
5 ~~[illegible]~~ as above [illegible] [illegible] apical [illegible] [illegible] [illegible] ~~[illegible]~~ . 807

6 tufts of apical [illegible] [illegible] papillae 542 864 909

? [illegible] [illegible] [illegible] 610. 542. 1006 ? 856







3847. Probably the new Sphenolobus.
The Scapania one of the curta group with decidedly thickened walls 157-137
the inner almost as thickened, but no trigones noticed. much like a small curta, & probably one of the curta group. gemmae rounded to rounded angular ? one cells
inner cells slightly larger. wine red
The per of ? Sphen new less plicate, & the cilia rather longer. The bracts mostly 3 fid, entire, & acute to apiculate

.46 x 1.35 3847a has also the Scapania ? glaucocephala, & has one ? bract 4 fid

3819a. Is good type, as 3864. The perianths are narrower in proportion. .45 wide x 1.30 long in extreme, there is a greater range of leaf form, The typical one concave, the sinus can be lunate in the less concave leaves, while the smaller leaves may have acute lobes as opposed to its obtuse to subacute lobes of the majority gemmae lest forgotten, as they may belong to Scapania. not seen under 1 perianth, bracts usually 3 lobed, none seen with teeth

Perianth 1.50 m × 1 mm wide
lobulate. incurved at mouth
cells much as in leaves, but hyaline at mouth
the lobules broadly acute, some ending in
cilia 2-4 cells long, lobules & cilia incurved;
bracts 2-3 lobed with entire margins, to .8 mm wide
& the leaves beneath larger than those on sterile
stems; gemmae from the edges of upper
deformed leaves, venous read, much as described
for Hellerianus, but no gemmiferous shoots seen
perianths may be as above to narrower & cylindrical
with a gradual drawing in towards mouth, &
Mariavaslavetz all differences between
65 SW mouths seem all about the
Mojaesh same, lobulate with
Viaoma lobes broadly acute
ending in 1 cell, to a few ending in cilia to 4
cells long
so far differences
are not spinous ciliate few
& not spinous dentate bracts
& no gemmae shoots

960
1 2 +
0.0 + 8
4 2
25

cells somewhat equally thick walled, irregular in size, but averaging around 17μ, from 12 to 20
leaves bifid, lobes equal / no trigones
subobtuse, sinus acute, lobes close together;
to .4 mm long + almost as wide, quadrate in outline; cells papillose; antheridium ~~170μ~~ to .150μ
leaves concave cells same base to apex
lobes wide apart, sinus acute to subacute
bract 3 fid entire;
leaves ~~often~~ concave, ~~to~~ sometimes caniculate
sinus acute to obtuse, usually somewhat connivent. lobes subacute to obtuse;
antheridial bracts more swollen (ventricose) & more obtuse than ordinary leaves;
perianth mouth crenulate, up to ? 2 cells long; leaves subquadrate to subrotund;
rhizoids frequent, long to near apex, hyaline to dirty hyaline; insertion transverse with no sign of decurrency.

Sphenolobus sp nov

Plants in mats close to the soil, on earth or forest debris, to 3, occasionally to 5 mm long, bent. Diocous. Leaves approximate to overlapping, somewhat secund. Bifid, broadest about middle, 2.5 to 3 mm long when mature, by .5 mm to .8 mm broad. Lobes obtuse to subacute, sinus open, when wet acute to lunate. usually subacute. Leaves somewhat obliquely inserted, and secund. Stem with numerous dirty hyaline rhizoids. Underleaves none, except rarely one between the bracts. Cell walls firm, rather thick but without trigones, chlorophyll showing up rather plainly. Surface papillose, the papillae showing on both surface(looking down thro microscope) and on edge or surface when folded. (1 cells) Variable in size, shape and arrangement, averaging around 18 mic. Border cells with a tendency to be quadrate. Very little larger in size below. until near base where a few are 20 + 30 mm

Antheridial bracts somewhat similar to leaves, but a little larger, and more saccate, the antherids single in the bracts, and large for the size of the plant, averaging 130 mic. Second pair of bracts, a little larger than leaves, but otherwise similar. Bracts variable 2 to 3 fid, × occasion decidedly larger than leaves, sharp pointed to apiculate. + Perianth cylindrical to near top, where slightly or more contracted, into short plicae. Avg 1.4 mm long by .8 mm broad. Teeth numerous and coarse, and variable, from 1 to 5 celledin a single row, or much broader at base, frequently cut ~~deep~~ into mouth of perianth. ~~Dioecous~~, antheridial bracts terminal on all examined. Young shoots with smaller and more distant leaves, more acute.

Gemmae rare, angular, reddish, irregular in shape, from irregular round to irregular angular. Gemmae deforming tips of upper leaves. Avg 15 mic.

(Note, lengths of leaves should be .25 to .3 mm long by .35 to .38 mm broad, shifting the decimal point.

This seems to cover the common variations.

Type 3864, on forest floor, at Nordegg, Pine Forests. (Alberta) where not rare, being found in a number of different places in the district

2 aug 7 1928

× rarely 4 fid, separate to connate (see fig 1) + margin entire

leaves when dry with lobes strongly incurved.
The plant is interesting as forming a link between Sphenolobus & Cephaloziella and through large for the Cephaloziella the shape of perianth & the occasionally partly connate bracts partly bridges the gap between the two genera.
The plant has been confused with S Hellerianus so the points of distinction are given below.

albertinus	Hellerianus
Perianth lobulate, with short teeth cilia few in number	Perianth lobulate with long numerous cilia
Bracts usually 3 fid, rarely 2 or 4 fid with entire margins, lobes sometimes apiculate, bracts occasionally connate in part	Bracts 3 fid (sometimes 4 fid) with few to numerous teeth
Leaves concave bilobed with incurved lobes lobes subobtuse to subacute, rarely acute sinus lunate to acute	Leaves canaliculate teeth bilobed with acute to acuminate lobes, sinus acute
cells averaging 18, little if any larger at base of leaves, irregular in size & arrangement, rather thick walled but without trigones	cells averaging 17, very thick walled, usually much larger at base of leaves
Gemmae branches absent	gemmae branches constant with reddish tetrahedral gemmae
Gemmae rarely on margins of upper leaves	
Habit forest floor & floor debris	Habitat rotten wood

Sphenolobus Albertinus sp nov.

Plants in mats, close to the soil, on forest debris, or more rarely on earth.

To [illegible], occasionally to 5 mm long, bent. Dioecous.

Leaves approximate to overlapping, somewhat secund, bifid, broadest above middle, .[illegible] to .[illegible] mm long, when mature, by .[illegible] to .[illegible] mm broad.

Lobes obtuse to subacute, sinus open when wet, subacute to lunate, mostly subacute. Leaves somewhat obliquely inserted and secund.

Stem with numerous dirty-hyaline rhizoids. Underleaves none, except rarely one between the bracts.

Cells variable in size, shape and arrangement, averaging around 18 mic, until near base, where a few are to 20 by 30 mic. Border cells with a tendency to be sub-quadrate. Surface papillose, the papillae showing on both surgaces (looking down through microscope) and on edge or surgace when folded.

Cell walls firm, rather thick, but without evident trigones; chlorophyll showing up rather plainly.

Antheridial bracts somewhat similar to leaves, but a little larger, and more saccate, the antheridia single in the bracts, and large for the size of the plant, averaging 100 mic. Second pair of perichaetial bracts a little larger than the leaves, but otherwise similar.

Bracts variable, mostly 3 fid, occasionally 2 or 4 fid, usually separate, occasionally connate in part (see fig 1) decidedly larger than the leaves, sharp pointed to apiculate, margin entire.

Perianth cylindrical to near mouth, where slightly or more contracted into short plicae; averaging 1.4 mm long by .6 mm wide. Teeth numerous and coarse, and variable, from 1 to 5 cells long in a single row, to (usually) much broader at base. (see fig) frequently cut into mouth of perianth.

Antheridial bracts terminal on all stems examined.

Young shoots with smaller, more distant and more acute leaves.

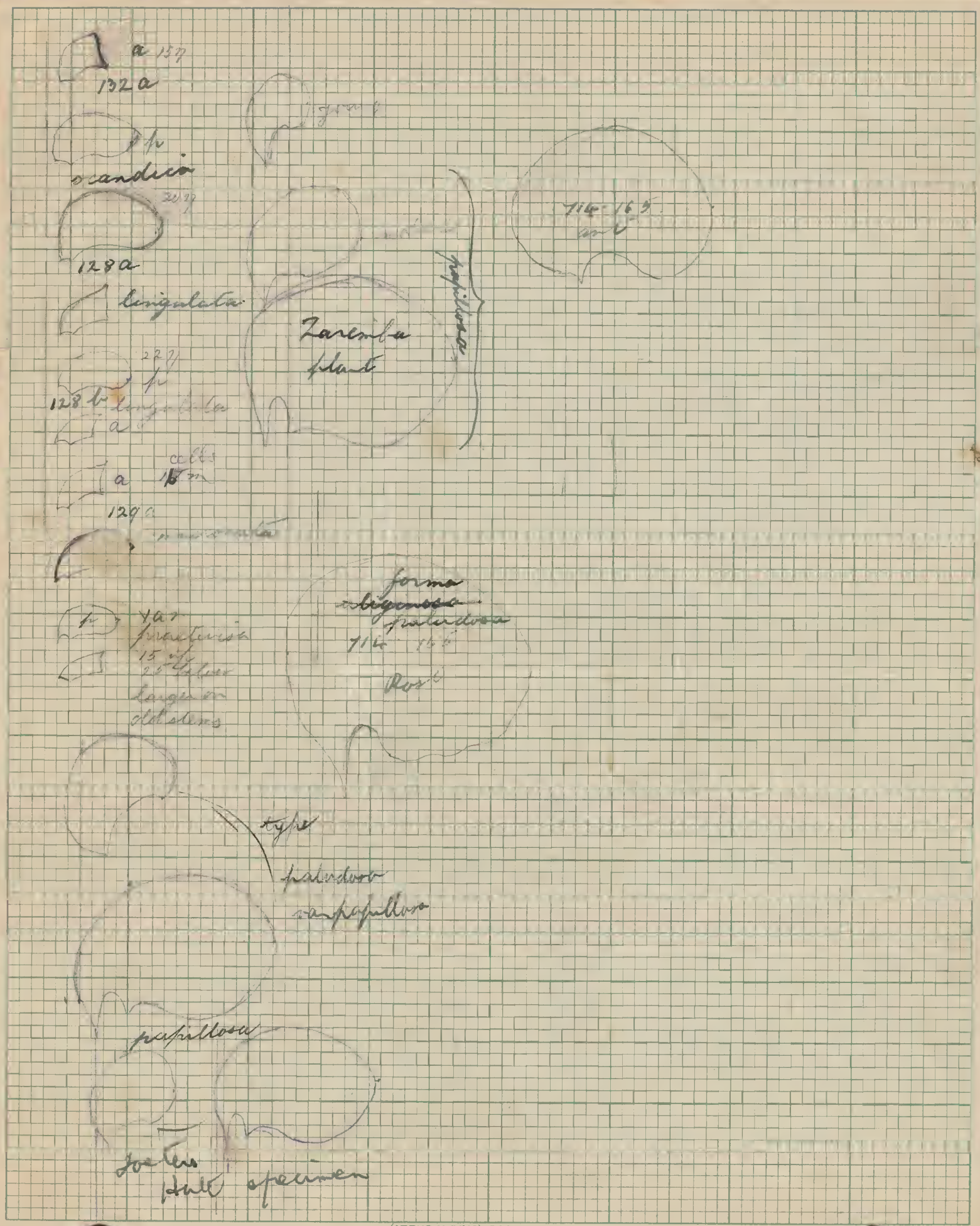
Type [illegible] on Forest Floor near Nordegg in pine forests, (Alberta) where not rare, being found in a number of places in the district.

The plant species is interesting as forming a link between Sphenolobus and Cephaloziella,and though large for Cephaloziella,the shape of perianth,and the occasional partly connate bracts partly bridges the gap between the two genera. The plant has been confused with Sphenolobus "ellerianus,so the points of difference are given below

S Albertianus	S "ellerianus
Perianth lobulate with broad teeth and also short cilia,few in number.	Perianth lobulate with numerous long cilia
Bracts usually 3 fid,sometimes 2 or 4 fid, with entire margins,lobes sometimes apiculate,bracts occasionally connate in part	Bracts 3 fid,sometimes 4 fid, with few to numerous teeth
Leaves concave,bilobes,with incurved lobes,especially when dry;lobes subobtuse to subacute,rarely acute; sinus lunate to acute	leaves canaculate,bilobed,with acute to acuminate lobes,sinus acute
Cells averaging 13 mic,rather thick walled,irregular in size and arrangement,not much larger till near base, where a few are 20 by 30 mic.	Cells very thick walled,averaging 17 mic,usually much larger at base of leaves
Gemmae absent	Gemmae shoots always present,with numerous red tetrahedral gemmae
Habitat Forest floor and floor debris	Habitat rotten wood

I am returning Sphen Helle they should have been sent long ago but I felt you would
have let me know if you wanted them. I am retaining the new species until published it
definitely is not Hellerianus. Some of the packets (specimens) were in very small quantity & in a few cases
where I could not find what looked like Hellerianus with a lens I left them alone, nearly
all however have been examined. You will find notes on some of the packets not enough to
disfigure. The two European plants, Persson & Arnell, I have picked out perianths from, & enclosed
them in small packets I have used them largely for reference along with macvicar.
1241. C C Haynes, Burnt Mt I should say definitely is not Hellerianus while it is off type I think
it may be put under S minutus. It is "off type" but S minutus is a very variable species, &
Wetness var muspidata while another var var obtuse from N W Territories ought to be published
The two packets of Victoria seem practically all Jamesoniella, no 10 I found no Hellerianus,
no 2 a few stems. No 92. C C Haynes, bell G H C, no Hellerianus seen but there is a plant
apparently new to science. The underleaves separate from Sphenolobus or Diplophyllum, it seems to
come under Lophozia perhaps nearest to Kunzeana but not very near at that, see note inside —
I have picked out a few stems & sent to Miss Haynes, & must try to separate out a few again,
There seems to be one perianth but as there is only one I leave undisturbed. It may not be the
new species as the packet is mixed. Went again over the packet trying out the plant with
the red gemmae. The plants I examined would seem to come near L heterocolpa but I
found no clear u l the gemmae are round to irregular & are distinctly reddish so I
put the material back again having failed to find the plant I wanted in the part I
examined; & being very uncertain in my mind just what the plant I examined was.
I would, with considerable hesitation call it heterocolpa forma. longidens has
somewhat the same form & recurving of leaf but my material is rather greenish than
brownish & here again the gemmae don't seem to fit tho the want of u l agrees with
longidens.
I was under the impression I had a letter of yours unanswered but I cannot find
it among my unanswered correspondence. I see from some of your printed material
that you have kept yourself very busy but the tricky Lejeunea group are almost unrepresented
in Canada or in the West, so the paper does not make a direct appeal, while the treatment of
Thysananthus must have been an exhaustive one fig 1-51. I take it to be a difficult genus
Thank you for the opportunity & privilege of examining the herbarium material of S Hellerianus
it helped clear up the point of relationship. Were you ever able to go over the axillaris
material & compare with a caroliniana. It seemed sufficiently different to leave doubts as
to its being that species. A most unpleasant winter here & it helps neither work or
study but we have to take it. Cincinnati is at least warmer tho they have their
troubles with floods sometimes something that never touches the prairies. The war seems
to be stretching its hands widely, taking in botanists also, & one misses them. Yet one
would hardly wish it otherwise until the war is over, won & finished. God grant there
is sufficient wisdom & unselfishness to make a lasting peace possible

If Macvicar's figures are taken as a basis for comparison the following points stand out. All the specimens examined were from wood, all had Gemmiferous stems, which however varied in abundance from plenty to very few, so few that considerable examination was necessary to find them.
While always the involucral bracts were serrated irregular serrate the figure by Macvicar shows the extreme form from there they varied to forms with fewer or smaller teeth often both, but no bracts were found that were quite entire. Macvicar figures the leaves as equally bilobed, ramiculate, acute to acuminate that seemed constant on well formed stems, but it was not unusual to come across depauperate specimens where the leaves were very small, as small as or smaller than a small Cephaloziella & in such cases there was also a very considerable amount of variation in shape, rarely a few lobes would be obtuse, but the sinus could be acute to obtuse, with almost parallel to wide apart lobes.
Macvicar gives the cells as 16-24, I found them averaging 17 at & near apex getting larger near base, where from 20-25. irregular in size & arrangement, & always thick walled, but with no trigones. While occasionally gemmae shoots were as figured by Macvicar, it was frequently the case that they were wider than the stem, & below more like the leaves on ordinary stem, his fig 3 of stem does not show the common form here, tho occasionally met with, they were more like the lower leaves shown on fertile stem. The perianth, lobulate & toothed, usually had the teeth extended into cilia, up to 8 cells long, but there was considerable variation of this character, some showing fewer & shorter cilia, but cilia seemed always present, & they seemed to be somewhat plicate & narrowed above. The gemmae are quite frequently better developed than shown of fig 6 of Macvicar, but attract attention mostly by their bright red colour.



		Hand	Pears	Shel	Ed	Sul		
Marsupella sparsifolia	6							
Frullania nisquallensis	5							
Porella navicularis	5	x	x		x	x		
Scapania Bolanderi	5							
Radula Bolanderi	5							
[illegible]	[illegible]				x			
[illegible]	6							
[illegible]	[illegible]							
[illegible]	6							
L. Schultzii	5							
[illegible]	5			x				
[illegible]	5							
Ceph. media	3		✓		✓	✓		
[illegible] politus	5			x		x		
Ceph. kunzeana	5	✓						
Marchantia polymorpha	3					x		
[illegible]	5							
[illegible]	4							
[illegible]	5							
[illegible]	5							
[illegible]	5		x		x			
[illegible]	1							
[illegible]	2		✓		✓			
[illegible]	6			x	x			
[illegible]	6							
[illegible]	5							
[illegible]	5							
[illegible]	5							
[illegible]	4							
[illegible]	1							
[illegible]	5							
[illegible]	5							
[illegible]	5							
[illegible]	5							
[illegible]	1							
[illegible]	5							
[illegible]	6							
[illegible]	5							
	Tens	197	162	199	213	170	202	152	126

Nardia Geocryphus 5
Loph [illegible] 5
~~[illegible]~~
S[illegible] [illegible] 3
L badensis 1
L ventricosa 5
~~Pleu[illegible]~~
Loph Binsteadii 3 P E S [illegible]
a P E

Jungermannia,N Sp

Autoicous,Male bracts some distance below perianth.

Leaves,small below,.35mm,enlarging gradually above till bracts are reached.

-Bracts,.8 wide and .8mm broad.

All broadly ovate,broadest at or below the middle,gradually coming to an obtuse or obtusely pointed apex. Concave.

Insertion,transverse,no distinctly narrower at point of insertion.

Cells,thin walled,but with minute trigones. above averaging 18u,irregular (varying between 13 and 23u) gradually but slowly enlarging towards base of leaf in centre,where averaging 18 by 30u,but on the outside of leaves at base,very little larger than apical cells. Surface verruculose.

Rhizoids,numerous on stems and innovations.

Perianth usually lateral by innovations,from horizontal to suberect,but curved,usually ventricose above~~=2mm~~= 1.2mm long by .75mm wide,broadest below to a point about 2/3 of length,where gradually contracting to a small mouth,which is .2mm wide,and with numerous crenulations crowded, short to 2 cells long. Upper part of perianth plicate.

The male bracts more concave than the leaves,shallow basin shaped.

Jungermannia,N Sp
Autoicous,Male bracts some distance below perianth.
Leaves,small below,.35mm,enlarging gradually above till bracts are reache
-Bracts,.8 wide and .8mm broad.
All broadly ovate,broadest at or below the middle,gradually coming to an obtuse or obtusely pointed apex. Concave.
Insertion,transverse,~~no~~ distinctly narrower at point of insertion.
Cells,thin walled,but with minute trigones. above averaging 19u,irregula (varying between 13 and 23u) gradually but slowly enlarging towards base of leaf in centre,where averaging 18 by 30u,but on the outside of leaves at base,very little larger than apical cells. Surface verruculose.
Rhizoids,numerous on stems and innovations.
Perianth usually lateral by innovations,from horizontal to suberect,but curved,usually ventricose above~~1.2mm~~= 1.2mm long by .75mm wide,broadest below to a point about 2/3 of length,where gradually contracting to a small mouth,which is .2mm wide,and with numerous crenulations crowded, short to 2 cells long. Upper part of perianth plicate.
The male bracts more concave than the leaves,shallow basin shaped.

Jungermannia [illegible] sp nov

Plants pleurocarpous through numerous innovations beyond female inflorescence [illegible]icous, [illegible]thridial bracts some little distance below perianth.

Plants small, usually under 1 cm long. Leaves frequently subsecund (refer to MacVicars plate of J atrovirens, Fig 1) but sometimes biplanate.

Leaves broadly ovate, clasping stem, attache much as in Figs 1 and 2 under J sphaerocarpa, by MacVicar, concave, usually largest just below perianths, where up to 1.[illegible]m long and 1.05 broad, smaller below. Attachus oblique, narrowed at insertion to .[illegible]. The leaves broadest below middle, narrowed above to a rounded apex. Cells, apical averaging 19 u, rather irregular ([illegible]) in size, somewhat thick walled, with small trigones. Gradually larger below, at base in centre up to [illegible] X 18 u. but at margins distinctly smaller and more isodiametric. Surface verruculose.

Perianths oblique by continuance of innovations; 1.30 mm long, by .[illegible] mm wide at or about centre, which is swollen to ventricose. Mouth .[illegible] mm wide deeply plicate, with numerous long cellded crenulations, 1-[illegible] cells high, base [illegible]. Rhizoids numerous on stems

Type, Canyon Creek, Monte Vista Dam, Placer Co, California, July 11, 19[illegible], [illegible] MacFadden. In Herb MacFadden

Jungermannia # sp nov

Plants pleurocarpous through numerous innovations beyond female i. autoicous, anthridial bracts some little distance below perianth.

Plants small, usually under 1 cm long. Leaves frequently subsecund (refer to MacVicars plate of J atrovirens, fig 1) but sometimes biplantsate. Leaves broadly ovate, clasping stem, attachment much as in Figs 1 and 2 under J sphaerocarpa, by MacVicar, concave, usually largest just below perianths, where up to 1.1mm long and 1.05 broad, smaller below. Attachus oblique, narrowed at insertion to .3mm: up to 1. The leaves broadest below middle, narrowed above to a rounded apex. Cells, apical averaging 10 u, rather irregular (13-23u) in size, somewhat thick walled, with small trigones. Gradually larger below, at base in centre up to 30 X 18 u. but at margins distinctly smaller and more isodiametric. Surface verruculose.

Perianths oblique by continuance of innovations; 1.30 mm long, by .8 mm wide at or about centre, which is swollen to ventricose. Mouth .2 mm wide deeply plicate, with numerous long celled crenulations, 1-2 cells high, base .3 mm. Rhizoids numerous on stems

Type, Canyon Creek, Monte Vista Dam, Placer Co, California, Jul 11, 1911.

[illegible] In Herb MacFadden

Jungermannia N Sp.

Plants autoicous, branched, usually under 1 cm long minute.

Leaves smallest below, enlarging upwards. Smallest .35mm long, usually broader than long, broadly ovate, broadest at or below the middle. Gradually coming to an obtuse apex. Concave. Somewhat obliquely inserted below, but nearly transverse near the perianth, as are also the male bracts. Usually the leaves are subsecund above, much as in MacVicar's plate of J atrovirens. The leaves clasping stem, but not at all decurrent. Cells irregular above averaging 19u, varying from 13 to 23u. somewhat thick walled from contents clinging to walls. Minute trigones present. Basal cells in middle up to 18 by 30u, but not much larger than apical at margins. Surface verruculose.

~~Perianth~~ Rhizoids numerous on stems and innovations, colourless.

Perianth usually lateral by innovations, from horizontal to suberect, base ventricose above, 1.2mm long by .75mm wide. Broadest at or below middle, plicate from there above, gradually contracted to a narrow mouth .2mm wide, the mouth with numerous crenulations, short, to 2 cells long.

Male bracts some distance below perianths, deeply concave, and transversely inserted. Bracts below perianth up to 1.1mm long by 1.05mm wide, Perianth at base .3mm wide.

Stem in section with outer row of cells, rather thick walled, 25 X 30u, internal cells thin walled, abruptly differing from outer row. Averaging 15mm wide. nearly hyaline outer cell walls distinctly verrucose

Type, Canyon Creek, Monte Vista Dam, Placer Co, California June 11th 1933 Coll F A MacFadden, in herb MacFadden.

The continuous innovations give the plant a pleurocarpous character, and the perianths are sometimes curved.

The irregular cells are very similar to those of J atrovirens, to which the plant seems closest in relationship, but that plant is diocous, ~~with~~ while perianth is ovate to oblong-ovate, but is variable in shape; it however does not appear to have any tendency to approach the shortly-attenuate pointed mouth of the above. The stem is section shows smaller internal cells, and while the outer are nearly as large as those of above, the inner are distinctly larger, averaging 20mm, and not sharply marked off from the outer row.

The perianth of J pumila ~~has~~ makes some approach to that of above, but is more longly attenuate, and less markedly crenulate at mouth, also it is nearly always terminal in appearance, and shows no sign of being ventricose above, being rather fusiform. The leaves are larger, and while the apical cells are not markedly larger, they are less irregular, more noticeably thin walled, and below they are distinctly larger, mostly some 50u long, or even longer. The marginal row is rather distinctly marked off.

In stem section the cells of J pumila show but little tendency to differ, and though the outer are larger, 25 X 30, the inner are also larger than above, some 17u, gradually mixing with outer row, not distictly marked off. They are also distinctly firm walled .

J Schiffneri has a different perianth, the male bracts are directly below the perianth, the leaves are distinctly different on the infertile branches from the broader than long leaves of the fertile stems.

It has to be remembered however that other of the californian Jungermannia are variable, thus J Schiffneri from there has larger cells than usual, and a longer perianth, though variable perianth is also noticeable from material collected in B C and Alberta. Then californian J pumila had not the longly attenuated perianth usually found on European material.

J Bolanderi is distinctly different, and the large decurrent leaves with "upper leaf cells 25-40u, and basal 45-96, will easily mark off from above.

J Lanicola is described as perianth obovoid, exserted, irregularly plicate towards the abruptly contracted, at first crenulate-denticulate mouth. The cell size given is larger also, 24-50u.

J riparia has larger cells, more ~~thick-walled~~, thin walled, smaller trigones cells more regular, the perianth is quite different though it is variable in size and shape; none being seen however with the attenuate mouth of the above - It is usually a larger plant

A plant from California, Coll E C Sutcliffe, Oct 1927, Plabe Flat, Sierra Co, is so near the usual material of J atrovirens, that it appears to fit well enough there to be quoted as an addition for California.
That plant is at first sight similar to above, but the few perianths found, though immature, or else imperfect, are distinctly different, also the stem section is similar to that of European J atrovirens, and the plant seems diocous. Male plants found with no ~~antheridia~~ archegonia, and perinth bearing plants showing no sign of Antheridial bracts.

Jungermannia N Sp. *mac Faddenae*

Plants autoicous, branched, usually under 1 cm long minute.

Leaves smallest below, enlarging upwards. smallest .[illegible] long, usually broader than long, broadly ovate, broadest at or below the middle. Gradually coming to an obtuse apex. Concave. Somewhat obliquely inserted below, but nearly transverse near the perianth, as are also the male bracts. Usually the leaves are subsecund above, much as in MacVicar's plate of J atrovirens. The leaves clasping stem, but not at all decurrent. Cells irregular above averaging 19u, varying from [illegible] to [illegible]. Somewhat thick walled from contents clinging to walls. Minute trigones present. Basal cells in middle up to 18 by 30u, but not much larger than apical at margins. Surface verruculose.

~~Perianths~~ Rhizoids numerous on stems and innovations, colourless.

Perianth usually lateral by innovations, from horizontal to suberect, ventricose above, 1.[illegible] long by .75mm wide. Broadest at or below middle, plicate from there above, gradually contracted to a narrow mouth .[illegible] wide, the mouth with numerous crenulations, short, to [illegible] cells long.

Male bracts some distance below perianths, deeply concave, and transversely inserted. Bracts below perianth up to 1.[illegible] long by 1.0[illegible] wide, Perianth at base .[illegible] wide.

Stem in section with outer row of cells, rather thick walled, [illegible], internal cells thin walled, abruptly differing from outer row. Averaging 1[illegible] wide. nearly hyaline walls distinctly verruculose

Type, Canyon Creek, Monte Vista [illegible], Placer Co, California June 11th 19[illegible] Coll F A Macfadden, in herb Macfadden.

The continuous innovations give the plant a pleurocarpous character, and the perianths are sometimes curved.

The irregular cells are very similar to those of J atrovirens, to which the plant seems closest in relationship, but that plant is dioecious, with perianth is ovate to oblong-ovate, but is variable in shape, it however does not appear to have any tendency to approach the shortly-attenuate point of the above. The stem is section shows smaller cells, and while the outer are nearly as large as those of above, the inner are distinctly larger, averaging [illegible], and not marked off from the outer row.

The perianth of J pumila has some approach to that of above, but is more longly attenuate, and less markedly crenulate at mouth, also it is nearly always terminal in appearance, and shows no sign of being ventricose above, being rather fusiform. The leaves are larger, and while the apical cells are not markedly larger, they are less irregular, more noticeably thin walled, and below they are distinctly larger, mostly some [illegible] long, or even longer. The marginal row is rather distinctly marked off.

In stem section the J pumila show but little tendency to differ, and though the outer are larger, [illegible], the inner are also larger than above, some 17u, gradually mixing with outer row, not distinctly marked off. They are also distinctly firm walled.

J Schiffneri has a different perianth, the male bracts are directly below the perianth, the leaves are distinctly different on the infertile branches from the broader than long leaves of the fertile stems.

It has to be remembered however that other of the Californian Jungermannia are variable, thus J Schiffneri from there has larger cells than usual, and a longer perianth, though variable perianth is also noticeable from material collected in B C and Alberta. Then J pumila had not the longly-attenuated perianth usually found on European material.

J Hornschuchiana is distinctly different, and the large decurrent leaves with "upper leaf cells 25-40u, and basal 45-90, will easily mark off from above.

J [illegible]cola is described as perianth obovoid, exserted, irregularly plicate towards the abruptly contracted, at first crenulate-denticulate mouth. The cell size given is larger also, 24-30u.

J riparia has larger cells, more ~~thick-walled~~, thin walled, smaller trigones cells more regular, the perianth is quite different, though it is variable in size and shape, none being seen however with the attenuate [illegible] of the above

A plant from California,Coll E C Sutcliffe,Oct 1937,[illegible]abe Flat,Sierra Co, is so near the usual material of A atrovirens,that it appears to fit well enough there to be quoted as an addition for California.
That is at first sight similar to above,but the few perianths found, though immature,or else imperfect,are distinctly different,also the stem section is similar to that of European A. atrovirens,and the plant seems dioecous. Male plants found with no ~~antheridia~~ archegonia,and perianth bearing plants showing no sign of antheridial bracts.

Jungermannia pumila. Knight Llandovery. The apical cells 21, not much differing in size, firm walled, trigones [illegible] or minute. The basal cells decidedly larger, up to 50 μ & occasionally beyond. Stem cells 25 + 30, inner 16-17, firm to thick walled, dark-green, almost as much dark coloured as outer, rather rapidly enlarging. Leaves larger than new, & oval not as broad as long. Perianth longer & narrower, to 2 mm × .75, gradually tapering above to a mouth 1 mm. The cells variable above, sometimes nearly equal, sometimes unequal, with a rather well defined marginal row.
Distinctly larger basal cells, larger leaves, more oval, stem structure also different & perianth decidedly different in shape, no signs of ventricose, & seemingly terminal, on all examined.

J. atrovirens. Pearson Jones Owen. The cell structure differs but little in size & irregularity from the new one either basal or apical. The leaves may be as broad in proportion. The stem has outside 25-30, inside 20 + & no marked difference, the plant seems dioecious. There is considerable variation in leaf size & width & no differences can be laid down as while usually oval they may be on occasions wider than tall & while small below, gradually become larger above. The leaves seem decidedly more oblique below than in the new. Plant seems dioecious, what seems like terminal male bracts & an antherid being found.

Plate Flat, Sierra Co. California. Sutcliffe Jul 1927. Differing from 8936 in perianth which, while variable, shows no sign of being ventricose, in stem which has cells not markedly larger tho less thick walled than in Jones's plant & in being ? dioecious, no sign of male bracts. Cells much of atrovirens shape, size of leaf do, & shape variable. Immature to overmature perianths. All erect. One with lobed mouth, immature seems crenulate, & one so long as almost to suggest Howe plant.

8936. The cell structure + minute size may suggest alnorviens. The cells are irregular in size & appear thick walled from chlorophyll clinging to them but are really fairly walled with minute trigones? The colour is greenish, not blue green & the leaves distinctly wider, usually wider than long, making in that respect some approach to J Schiffneri,

leaves somewhat oblique below nearly transverse above & subsecund cells of perianth slightly larger, avg 21. irregular, fairly walled, but trigones usual none. cells of stem isodiametric, avg 30 "green" inner stem cells long narrow 11 μ dia hyaline. Good section. Inner cells avg 15, 11-20 thin walled almost hyaline. Outer layer abruptly longer, avg 25, thicker walled, outer layer verrucose

1018 1019 as 1018
19 1020 Differs in leaves from a broader base,with narrower cells more
20 sinuose,the thicker cell walls making the cells appearing still narrower.
21 Infl seems synoicous. inner peristome more appendiculate,outer cells
22 without the well marked projections,of 1019 1019.short necked.
23 Teeth deeper red
24 inner peristome not better developed than 1018
25 Lid seems with a tile series of outside cells 3 rows
26 1021 Lid with a row of elongated cells,annulus not composed of a row
27 of long cells on a row of shorter cells but with a double row of irregular
28 cells,with a row of rather short & somewhat irregular cells.
29 Dioucous,no antherids found in my flowers.
30 Leaves ovate,usually widest at or above the middle,cell rather wide,
31 rather thick walled,border plain,recurved in older leaves,& appressed
32 so as to seem double bordered.
33 Outer peristome bryoid,innerperistome not well seen, & outer peristome
34 possibly of double teeth.
35 1024 Almost pure B Brinkmanii,with a few stems of ? Pseudo-triquetrum
36 & occasional plants of the other associated Bryum,(" bulbosum)

36 1024 Almost pure B Brinkmanii,with a few stems of B pseudo-triquetrum
37 & occasional stem of B Bulbosum
38
39 1022 a plant that seems intermediate between Pseudo-triquetrum & Brink-
40 manii,with capsule much like latter,but differing in the 5 or more
41 rows of small cells at top of capsule & rather pale teeth compared to
42 one or two rows of small cells in Brinkmanii & very dep red teeth.
43 wide leaves,large & wide celled,& border not as pronounced seperates
44 from ordinary triquetrum.
45 a fourth species of Bryum also present
46 1023 Barbula rubella
47 1026 seems Pottia inclinata but with ? 16 bifid to trifid perforated
48 teeth from a membrane two or three cells high,all coarsely & irregularly
49 papillose or warted,teeth about six cells high,? broken.
50
51 1025 mixed with an amblystegium(as 1027),& ?
52 a Plagiothecium,with leaves falcate,the falcate portion,crossing the
53 main portion of the leaf,point,long but not attenuated,auricles well
54 defined of quadrate,but not hyaline cells,& the bottom cells rather
55 wider & shorter,nerve about third of leaf.
56 1026 Pottia inclinata with peristome & spores
57 bottom,but not auricled
58 1027 Amblystegium,cells rather broad & thickwalled,more quadrate at
59 nerve about 1/4 of leaf point ratherlong & almost straight.
60

1075 Leaves, thick nerved, upper portion of leaf all nerve, roughened, coarsely
1078 papillose, lamina, narrow at first, but rapidly expanded at base, not
1073 auricled. Cells irregularly quadrate, rather rapidly narrowing & lengthen-
1086 ing in expanded portion, not papillose. Swartzia inclinata
1089 Capsule globose, with 16 double perforated teeth, deep red. 1078
1085 1075

Bryum, Leaves narrowly bordered, nerve excurrent, border usually recurved below. Infl synoiccus. Capsule, narrow, straight, teeth perfectly bryoid,
1091 with inner peristome well developed, & plainly appendiculate.
1090 1073 Bryum, leaves narrow coiled with border of narrower cells, plane or slightly recurved. Nerve longly excurrent, spinulose, seemingly each surface cell extruding in a curved point.
capsule subglobose, usually constricted below mouth, surface rugose.
teeth irregular inside cell, usual outside cell plates, inner peristome ciliate & slightly appendiculate, separate from outer peristome.
Infl ? diocous, (no antheridia found)

1086 Leaves lingulate, acute, nerve percurrent, or ceasing just below apex in a few cells. Point of leaf serrate. Cells quadratish, rather pottiod, but with the cells at base long & narrow. Margin plane.
Infl autoicous, with two or more flowers, (up to four)
Cells roughly papillose, papilla ? double, nerve possibly smooth
(Mixed with Pottia ? inclinata)
1089 ?Pottia inclinata. Leaves plane or ? narrowly incurved, with a plain
1089 border of narrower cells, starting near top of leaf & going to bottom of
1085 leaf. Cells slightly papillose. Nerve percurrent, or nearly so, point
abrupt, usually of a few cells. Leaf somewhat concave, rather rotund, to
89 ordinary pottia shape. Infl ? diocous, capsule without peristome, inclined,
85 one ***** row of small cells below lid. Lid rather long pointed, point
26 inclined.
1085 Pottia inclinata. Infl plainly synoicous. Border of leaf seems narrowly recurved

80 1018 Bryum, near 1075. Capsule more globose, not markedly long, & teeth
48 red at base, not pale, teeth also markedly jaw shaped inside cells,
49 making ~~inside~~ face seem appendiculate. Lid mamillate.
54 Nerve smooth or almost so. Leaves usually recurved, atleast below, cells
56 rather wide for Bryum.
57 Differs from 1075 (capsule assymetric) in symetrical capsule, with shorter neck, making a small rather wide capsule, but like that in peculiar outgrowths in cells of teeth.

1028 ? Same as 1075, immature

1029 Funaria hygrometrica with small portion of Bryum ?

1030 ? same as 1027 an Amblystegium, but rather larger leaves & more serrate along with a bryum that has rather wide cells & narrow base, with Duvalii habit

1031 ossibly Brachythecium albicans

1034 seems same as 1027, but in good fruit, & synoicous, though antherids & archegons small.

1035 Bryum rather wide cells, border of narrow cells, rather narrow. border harrowly recurved from just below apex to base, point excurrent, sometimes percurrent, not longly excurrent, usually slightly serrate at apex of leaf. Leaf widest just above base. Synoicous. Capsule long, with pointed lid : ot ? a. milate, teeth pale, slightly punctate, inner peristome well developed, annulus of two rows of elongated cells, lid with a row of longer cells at margin, border of capsule with two rows of rather smaller incrassate cells.

1032 Harpidia, with exannulatum auricles, but entire leaf, no serrations, & very narrow cells. Nerve not up into acumen, slightly plicate, & falcate, not, or not markedly pinnate.

1033 ? same as 1027, but habit as ? Stellatum group.

1091 ? same as 1035 but with smaller capsule, & point more excurrent, synoicous, inner peristome ? as only parts seen

1098 Dioicous, no antherids found, though female plants common. Leaves wide, concave with wide cells, no narrow cells at border, & usually plane border. Very small leaves. point rather abrupt from obtuse leaf apex, usually not longly excurrcht, & often only composed at top of one layer of cells. Capsule very small with no neck, peristome perfectly eu-bryum. Thought at first an immature Bryum, but seems perfectly developed.

1036 seems as 1035 but, li about Mammilate

1037 Mixture of 6 species. arbula tophace & rubella, ryum ,? same as 1034 etc,a Webera,a ? Dicranacea or Leptobryum,& a ? Orthodortium.

1038 Pottia heimii & ? dry form of 1032,but with less distinct auricles, less inflated.

1039 seems good B rubella,with well developed peristome.

1040,Mnium ? cuspidatum

1041 Amblystegium,in good fruit,seems same as others,but larger leaves, more widely ovate,cells distinctly narrower,but with some branches much as the others,& with it another with falcate leaf points,& as narrow cells as most narrow of Amblystegium,shiny appearance,but not apparently otherwise distinct without fruit. A little Bryum ? pseudo-triquetrum.

1042 ? same plant as last of 1041,but darker,& with the nerve usually stronger.

& Bryum ? pseudo-triquetrum,with ovate to widely ovate leaves,wide cells,sometimes almost quadrate to well past middle of leaf,narrow border of cells,but variable,at times almost absent,leaf plane to lightly recurved to near apex,nerve usually slightly excurrent.? dioecous. Lid seems of double cells,giving it the appearance of tiling,peristome rather pale,inner peristome seemingly not appendiculate. Annulus double row of rather short cells on narrow border of small incrassate cells. Capsule gradually,not abruptly bordered with small,not incrassate cells. Capsule long necked. Spores seem to me markedly larger than usual with Bryum,& finely spinulose.

1083 ? Harpidia or Stereodon,with small but well defined inflated auricles,decurrent leaves,auricles often torn off,base deeply rounded. Cells distinctly narrow.Nerve to above the middle,acuminate,falcate, rather broadly ovate leaves. Also Bryum ? Pseudoatriquetrum & Leptobryum

1082 Amblystegium,with short nerve,long narrow leaves,usually separate, cells rather wide,those in corners usually quadrate. A few stems with broader leaves, & rather longer cells,but seems grading into other. a capsule with an aregoa on it.

1083 brachythecium,widely ovate leaves,with few plain quadrate cells at corners,cells fairly narrow,nerve short,leaves rather long pointed & serrulate.Amblystegium as above,& a few stems with widely ovate leaves with longer nerve,& short,but somewhat narrow & sinuose.

1084 same as 1078,but not in fruit, with hyaline points,through drynes

1085 ?harpidia aduncum V aquatica,,auricles of that group,& no sign of teeth,long flexuose point,& nerv to about base of acumen

1096 Amb ? conervioides,with obscure nerve,short pointed leaves,& cells nearly as wide as long,rather more quadrate at angles,with it a plant with longer & larger leaves,longer cells,more nerved,but seems an Amb,rather serrulate at margins.

1092 & 1093,both with rather wide cells,& teeth seem of usual pattern, not pendulum,? is air in teeth cause of markings,or possibly membrane markings. Capsule much as 1073,& plants otherwise not much distinct from it,leaves rather wider near middle perhaps

1094 rather larger capsules &showing in some teeth the markings before referred to,at base of teeth,in any case tge teeth are hot of ordinary construction,being plainly divided into at least two divisions,the cells narrower,but I doubt whether it can be seperated from 1075 clearly except when in fruit.

1095 Seems same as 1075,the teeth plainly appendiculate,cells rather narrower than usual,(see remarks above)

1091 & 1090,broadly ovate leaves with strongly serrate,at times spinose teeth,serrations to near base usually,cells long but notbtoo narrow, nerve about halfway up, leaves plicate. Fem with long flexuose points.

1099 Dicranum,with wide base suddenly contracted about thir up to a very narrow & incurved lamina of small obscure quadrate cells. Below cells long,narrow & hyaline,nerve rathern rrow. cells above serrate,lamina ceasing below apex,which seems serrate all round strongly curled when dry,flexuose when moist

1100 Pinium with rostratum leaf,but decurrent,nerve ceasing below apiculus,points very sharp,usually reaching about half way down,unknown

1101 leaves rather broad pointed,serrate to or near to base,nerve to about half way,leaves somewhat plicate,cells rather wide for rachy leaves somewhat decurrent,almost cordate at base with a few rather plain quadrate alar cells reaching almost to nerve.? D striosum

1044 Bryum,same a 1042.double layered lid & all,but not quite so well marked cells & leaves,& wall cells incrassate,but otherwise same,under mouth of capsule,also a little Leptobryum?,with rather obscure nerve, but bottom small leaves bryoid,& with round brown bulblets on roots.
1045 Amblystegium,? same as 1027,& a little of plant ? same as 1033
1046 Barbula rubella
1047 ? dwarfed 1027
1048 ? Amblystegium serpens,nerve strong,to near apex,& broad below, leaves smaller,cells much about same,& P inclinata with good peristome. peristome membrane about 3 cells high,& teeth to 8 cells high,bifid to trifid,filiform,but usually variously joined below,densely & closely papillose
1049 Pottia inclinata as a ove.With Amblystegium,(? serpens) as above, & a Bryum with pendulum structure of teeth,Small mouth,& conical lid, No inner peristome noticed. Lid double,tiled,annulus cells seem superimposed,from a narrow row of incrassate cells,red. ? double annulus corresponds to double lid. Leaves much of caespiticium type,rather narrow cells,well defined border,revolute to near apex,nerve bent variously,strong,well excurrent,& almost smmoth
1050 Seems Mnium rostratum
1051 C Brachythecium salesbrosum,but leaves rather more widely ovate, not so long a point,& nerve not so strong.
1052 Pottia Heimii & a circinate leaved plant with broad base & plain though usually dark auricles,& rather narrow cells,nerve broad at base but not much above base of point. Also ? Amblystegium
1054 C Pottia inclinata,well developed peristome
1053 B Brijkmanii,but shows little if any inner peristome. Lid seems two layered with a third layer ?inside annulus. Annulus two layered from a layer of interrupted incrassate reddish cells
1055 Pottia inclinata,variable in size & length of capsule & seta,& size of plant
1056 C pendulum,seems same as plant in 1049,with thick bent nerve also a Hypnum ,One capsule of Bryum shows not pendulum .Hypnum with incrassate quadrate cells gradually at bottom,no marked auricles except
1057 Pottia inclinata,c/pr -one with inflated cells hyaline.Circinate
1058 Barbula rubella & Brachythecium ,seems near Glareosum, with very narrow areolation,& marked auricles with quadrate pellucid thickwalled cells.
1059 Brachythecium with wider areolation,rather wider leaves,cells laxer at base,but hardly with auricles,& Ceratodon & Leptobryum,with bulblets
1060 Leptobryum & a little Bryum with well marked appendicular cilia,& contracted below mouth,leaves hardly recurved,about plain with narrow row of narrow cells to near apex or sometimes not existant,nerve percurrent or shortly excurrent. Also Amblystegium

1061 Amblystegium,with wide incrassate cells,no alar ones,leaves rather falcate,nerve broad but soon disappearing,border of leaf with cells projecting all round.
1062 Seems same as 1059 in fruit & Bryum,with pendulum inner cells of peristome,& inner peristome not seemingly appendiculate. Leaves broadest just above base,well marked margin of narrow cells,closely recurved, so as to seem bistratose,cells fairly broad,point almost smmoth,excurrent.
1063 Bryum of Alpinum group,usually wide celled,with almost obtuse leaves & nerve bent & percurrent,with plane margin & no narrow cells, but sometimes nerve slightly excurrent,apex boat shaped,sometimes a border of narrow cells
QFYT1065 ?same as 1063,swamp form,with leaves less appressed,usually sharper pointed,with narrower cells & with often a narrow border,but all these characters are variable, it seems as above.With it an hypnum leaf broadened out from a narrow base,thick nerve,soon vanishing,below apex,point falcate to circinate,alar cells not well marked,but quadrate & incrassate, cells narrow.

1067 as 1063,well marke , with a strong tendency to reddish.
1064 Funaria,,Leptobryum,& a little Amblystegium ? minutissimum,leaves long lanceolate,ecostate,or faintly nerved,cells fairly lin ,border of leaves serrate,leaves rather falcate.
1066 L rubella & Leptobryum
1068 ? Amblystegium,with points often coarsely serrate.Border more or less serrate,cells narrow,no marked auricles,but a few quadrate cells gradually ? adnatum.
1069. ? same as 1075(?)synoicous,long capsule,border strong cells wide leaves widest about or above middle,well appendiculate,leaves recurved borders.Ceratodon,& Brachythecium,? glareosum,no auricles,long point, rather twisted & serrate,few quadrate cells gradually at corners,nerve poor,somewhat plicate.
1070 ? Barbula.leaf apex very variable,acute or acuminate to broadly obtuse,leaf cells pellucid,very thick walled,basa, leaves cells more obscure,margin equally recurved on one or both sides to above centre, never to middle,apex toothed irregularly.nerve always ceasing below apex,leaves crowded on stems, stems tomentose with root hairs well up, cells with a single conical to acute papilla,usually hyaline,at least at apex,giving leaves rather a saw like appearance,nerve also with same kind of papillae. & Bryum,? same as 1073,young leaves broader,broader cells,margin not so strong & not recurved.& Brachythecium,autoicous, with ovate leaves,somewhat serrulate at margins,long pointed,point serrate,nerve less than half way.Cells long & narrow,pellucid,few cells at auricles quadrate,rather plain.Fem rather short broad & very long pointed serrate points,male,much as ordinary leaves.& a little Amblystegium
1071 ? same as above,but leaf points more incurved,in fact channeled,& cells seem more projecting,& with it another ?,with narrower cells, leaf broader at above base,but comparatively narrow at base,alar cells more pronounced,& little nerve,leaves more plicate, edges smooth,also points,nerve seems short & double,on stem leaves,but longer on the narrow deeper plicate branch leaves,autoicous,male bracts from a broad base abruptly & long pointed,seems no paryphases.
1076 C Amblystegium,wide celled,thick walled,entire,short nerved,few more quadrate than rest at angle.
1077 -Same,& another harpidioid,with looser more gradually quadrate cells at base & narrower more sinuose cells rest of leaf,but seem broader than second of 1071,& alar cells not so distinct.
1074 Seems same as ~~1070~~ 1070,or perhaps as 1071 being more projecting cells at margin.
1072 ? same as 1075,leaves widest at or above middle,cells rather wide, border cells narrow & well defined,recurved to near apex,nerve shortly excurrent,not or but slightly spinulose
1073 Male flower found,with no sign of archegoniums,paraphyses plentiful, Also Ceratodon with both flowers well developed, some Amblystegium in small quantity,Bryum leaf broadest near base,cells,rather broad & points not so markedly spinose as thought.
1075 & leaves broadest above middle. Little toothed leaf Amblystegium & a little Brachythecium as 1070

1078 teeth double, sometimes treble perforated,7 to 10 cells high,cells pitted,giving a very irregular marking to teeth. Leaf of fem much expanded,& crenate with projecting cells,basal hyaline cells much as Tr flavovirens
1079 Papillose I Inclinata
1080 P Inclinata, loose celled form of B Nervosa with small bits of thick nerved ? amblystegium,with strong nerve right up into acumen, acumen more or less channeled,cells rahter narrow for the genus,a few at corners gradually more quadrate,cells projecting for some distance up edge of leaf
1081 Mostly B Nervosa,with a stem or two of P inclinata,& a broad celled widely ovate narrow bordered bryum,